



The Computer Assisted Virtual Environment (CAVE) helps a variety of researchers visualize their data. Here, a 3-D model of the Snake River Plain helps identify areas with geothermal energy potential.

Experts visit CAVE to gain insight into diverse data sets

By Kortny Rolston, *INL Communications & Governmental Affairs*

There's a cave in Idaho drawing visits from a wide range of researchers, from nuclear scientists to utility engineers to geologists. They're all flocking to the Computer Assisted Virtual Environment (CAVE) in the Center for Advanced Energy Studies at Idaho National Laboratory.

Since it was installed in 2010, scientists, engineers, architects and others have used the immersive 3-D environment for a variety of projects, including studying transmission line routes and examining subsurface terrain.

"The CAVE is a powerful research and education tool," said Eric Whiting, director of Idaho National Laboratory's Center for Advanced Modeling and Simulation (CAMS). "It allows researchers to see their data from new angles. And it piques students' interest in science, technology, engineering and math (STEM). The interactive, 3-D nature of the CAVE makes difficult concepts or systems much easier to understand."

Here are some of the projects the CAVE is being used for:

- * Bonneville Power Administration employees viewed a transmission line route to identify where trees and other objects were encroaching on transmission lines and possibly disrupting power supply.
- * CRSA, an architectural firm, is designing an events center in Idaho Falls and has loaded parts of the proposed design into the CAVE. With the 3-D immersive display, Kevin DeKold, the lead architect for the project, can view the design from different angles and even "visit" the center's hockey rink.
- * INL and Idaho State University researchers are using the CAVE to analyze LiDAR (Light Detection and Ranging) data for the Galloway Dam and Reservoir project — a potential dam site on the Weiser River. The information will help the Idaho Department of Water Resources and the Bureau of Reclamation complete feasibility, environmental and engineering studies. The CAVE also depicts how the dam and inundation area will look upon completion.
- * INL researchers have built a 3-D model of the Snake River Plain to view in the CAVE so they can visualize and evaluate subsurface characteristics and identify areas with the potential to produce geothermal energy.

Did you know?

The Center for Advanced Energy Studies (CAES) operates the CAVE as a user facility so industry, universities, government agencies and others can access it.

- * Idaho Falls Power and HDR Engineering have used the CAVE to examine a proposed transmission line route the utility wants to build north of the city. By taking LiDAR data of the route and overlaying it with models of power lines, they can "see" how the route affects vegetation, road access points and individual landowners.
- * CH2M-WG Idaho, LLC (CWI), the contractor that runs the Idaho Cleanup Project, has loaded in the CAVE a model for the planned treatment of high-level calcine waste. The model allows them to give virtual tours of the proposed waste solidification plant and help U.S. Department of Energy

and others understand how it will operate.

* Subcontractors designing new parts or systems for INL's Advanced Test Reactor use the CAVE to become familiar with the reactor's design and layout. They are able to "tour" a 3-D model of the reactor and view its piping and heat exchangers without having to undergo the extensive training required to view those areas of the real ATR.

(Posted Nov. 12, 2012)

[Feature Archive](#)